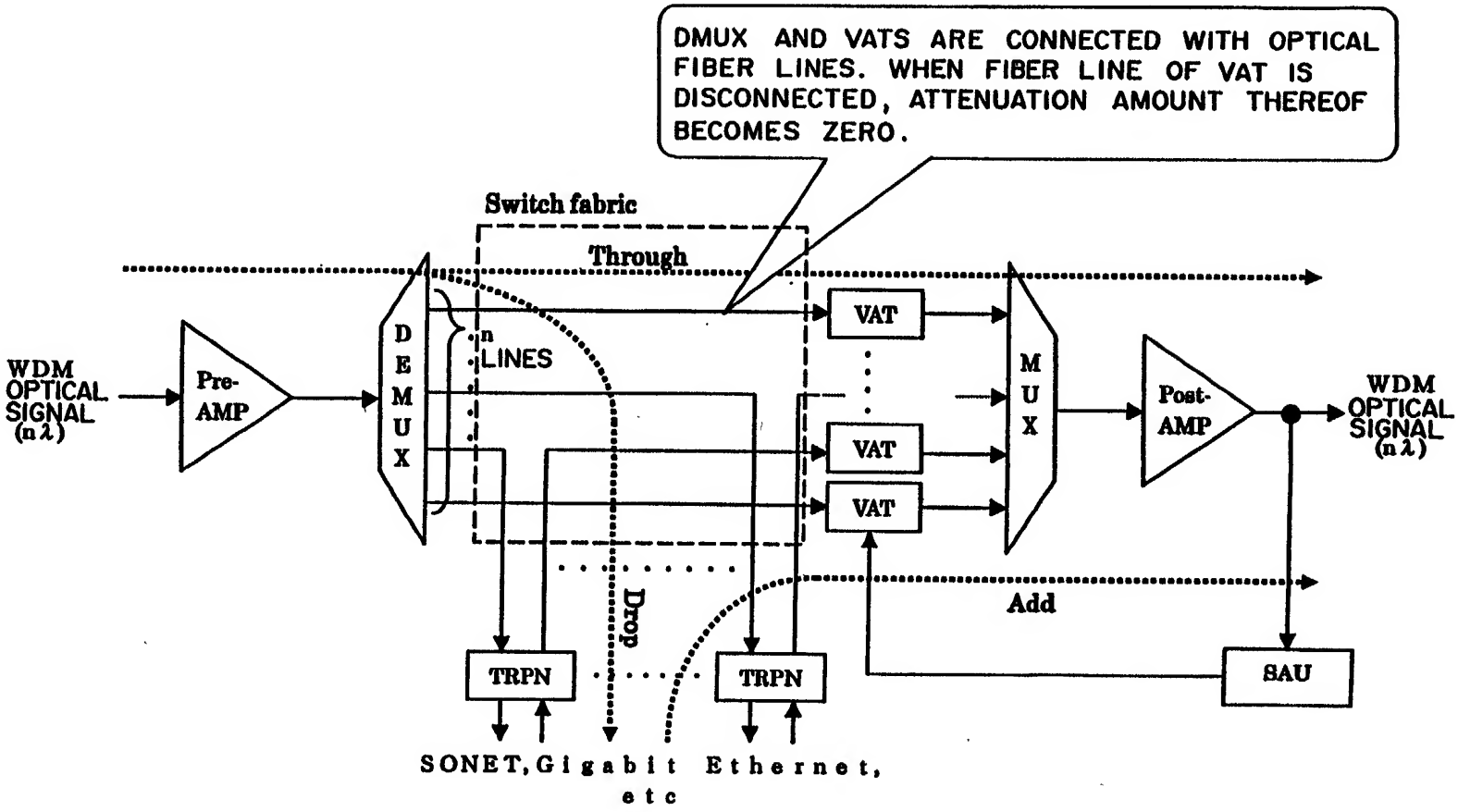


FIG. 1 PRIOR ART

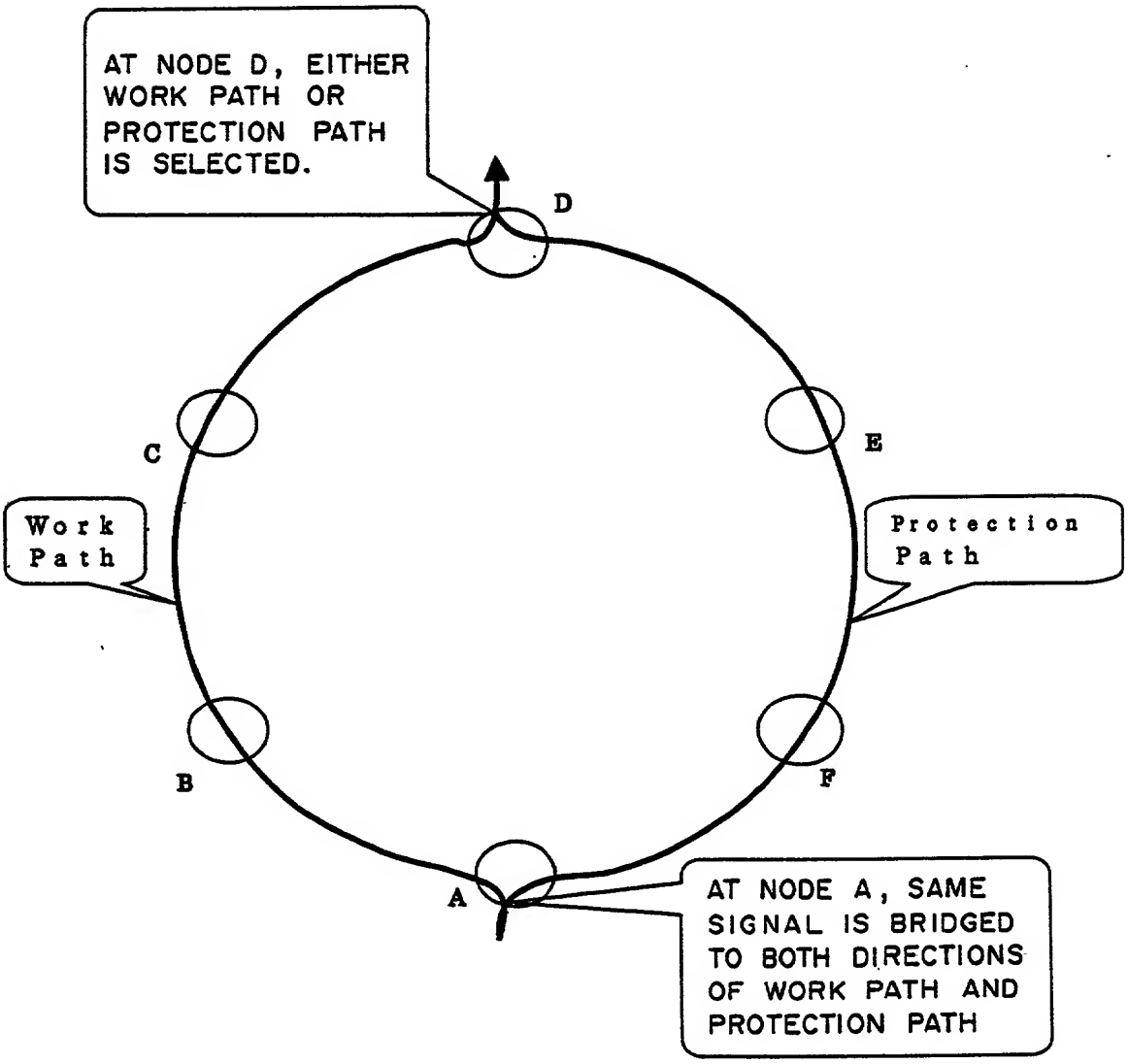


FIG. 2 PRIOR ART

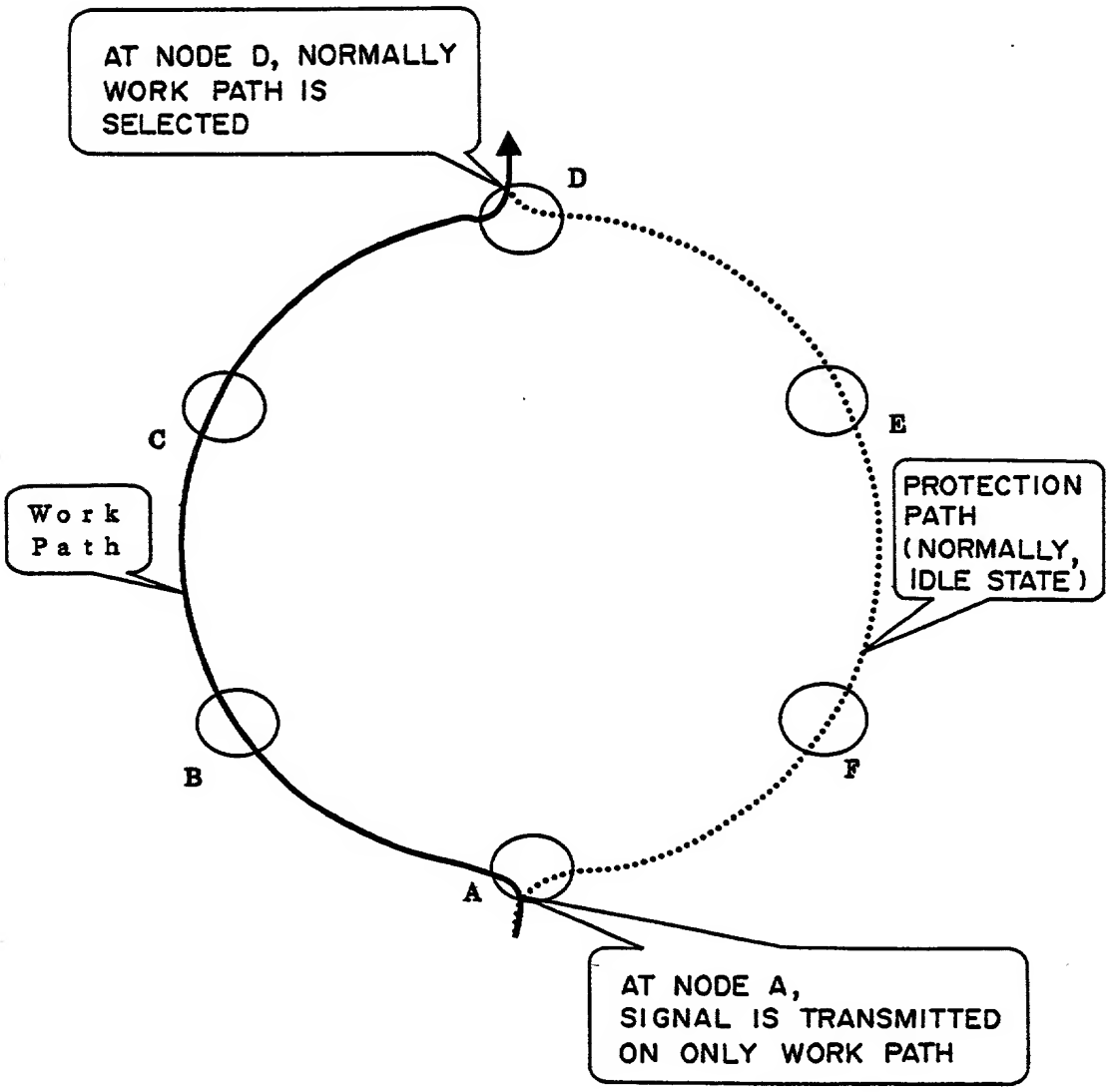


FIG. 3 PRIOR ART

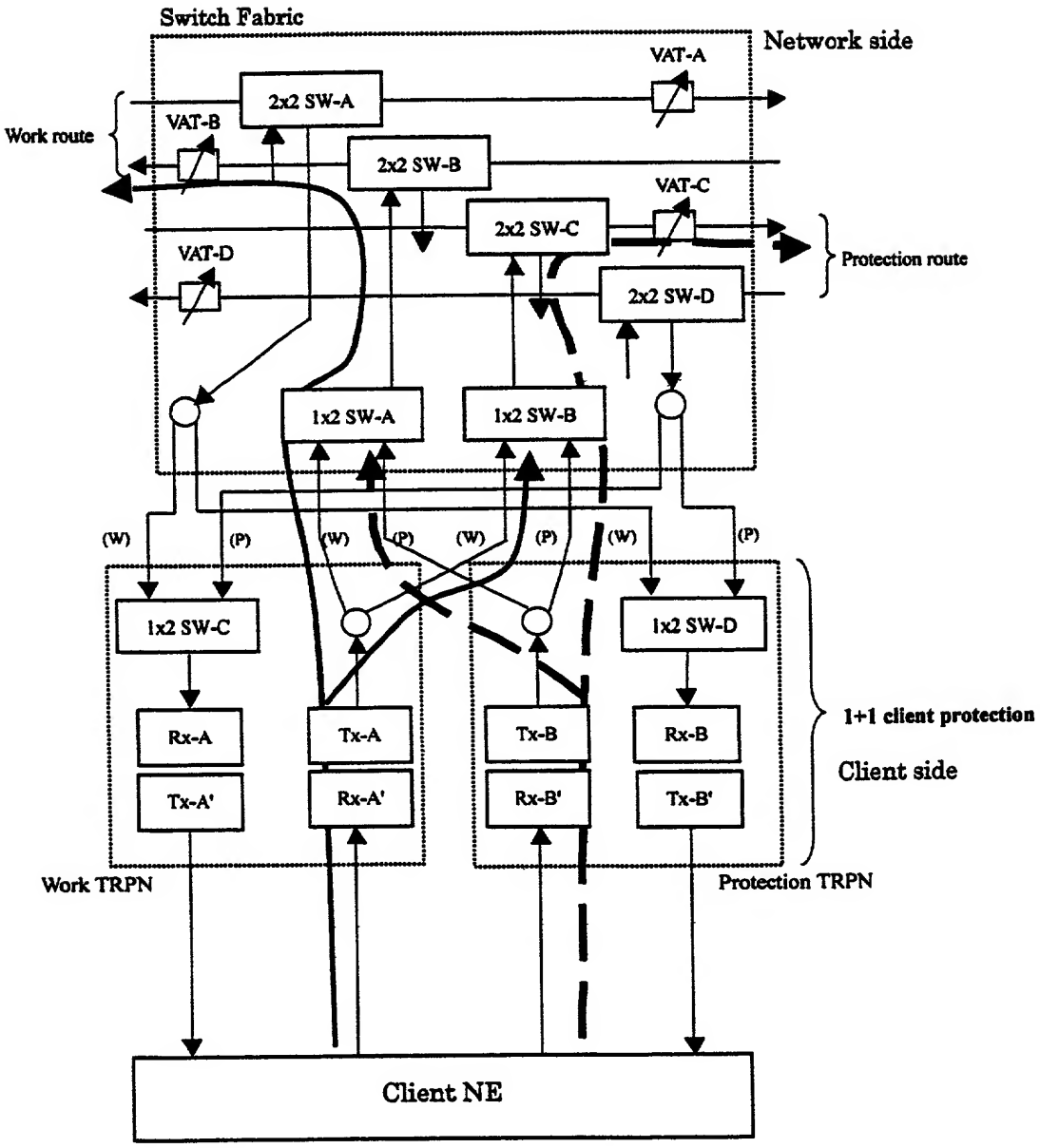


FIG. 4 PRIOR ART

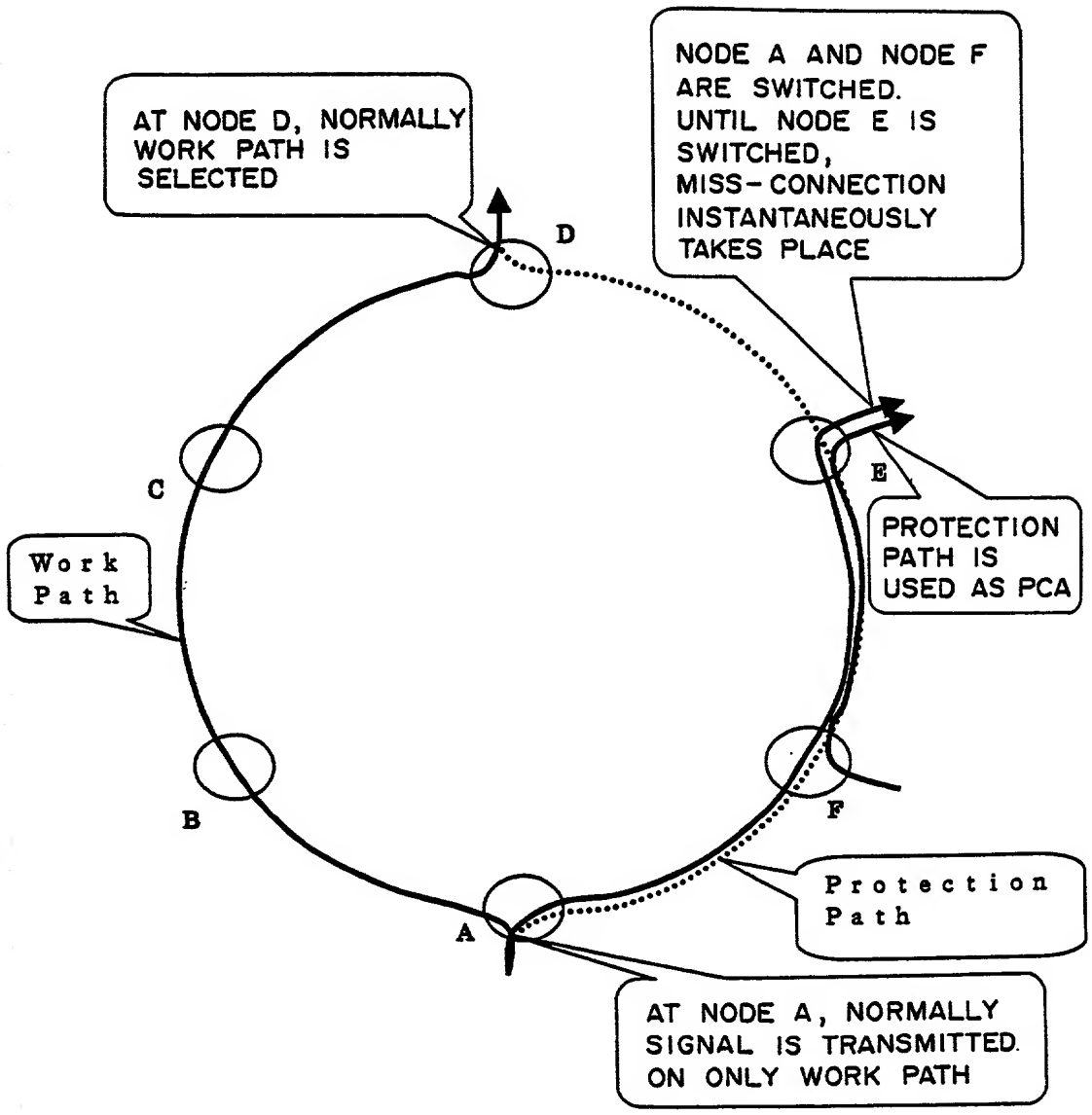
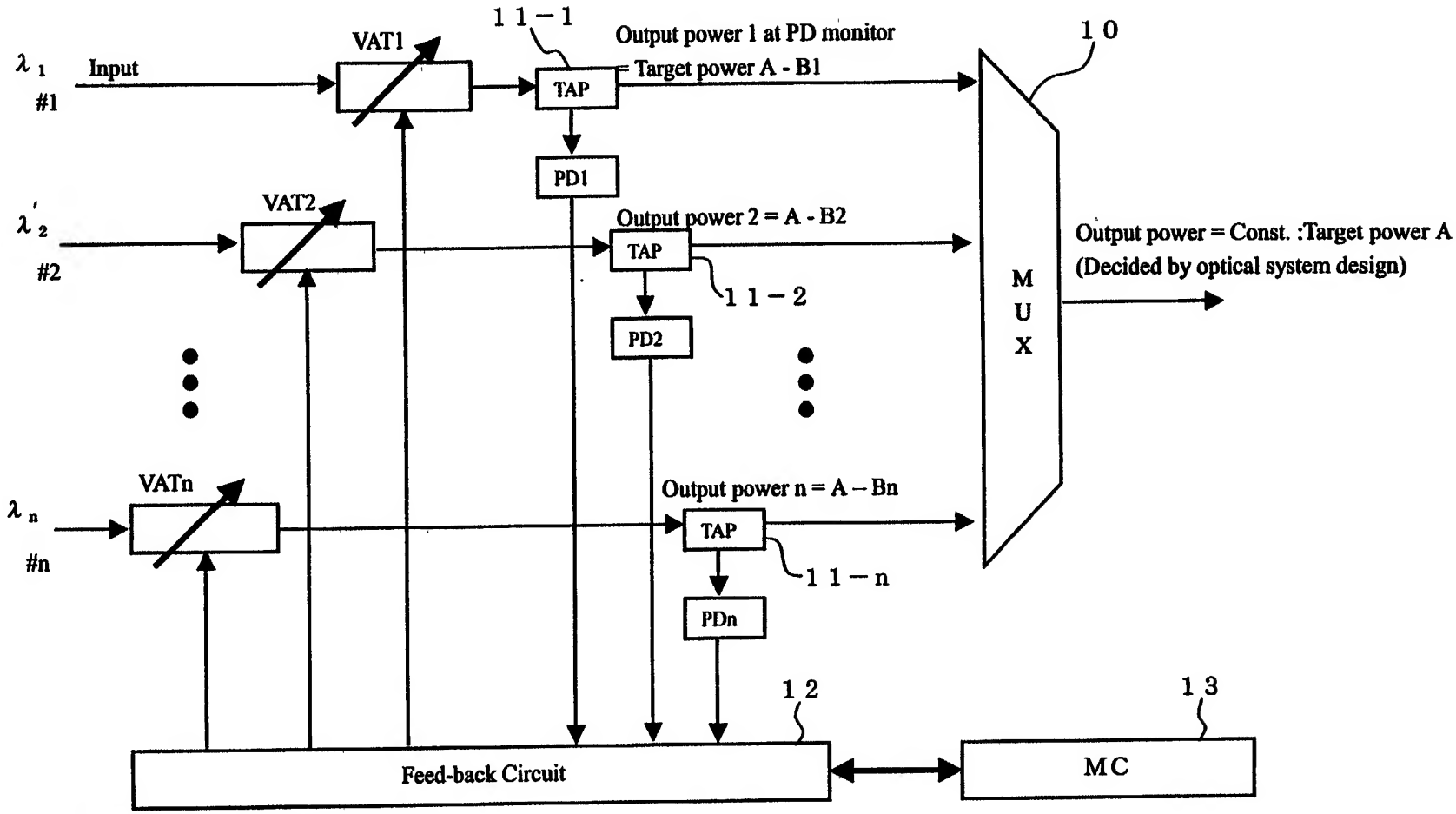


FIG. 5 PRIOR ART



A= Target power at Post Amplifier input

Bx = Off-set power value

B INCLUDES FLUCTUATION OF LOSSES OF PORTS OF AWG, TAP, AND SPLICE (CONNECTOR) AND MEASUREMENT ERROR OF PD MONITOR.

FIG. 6

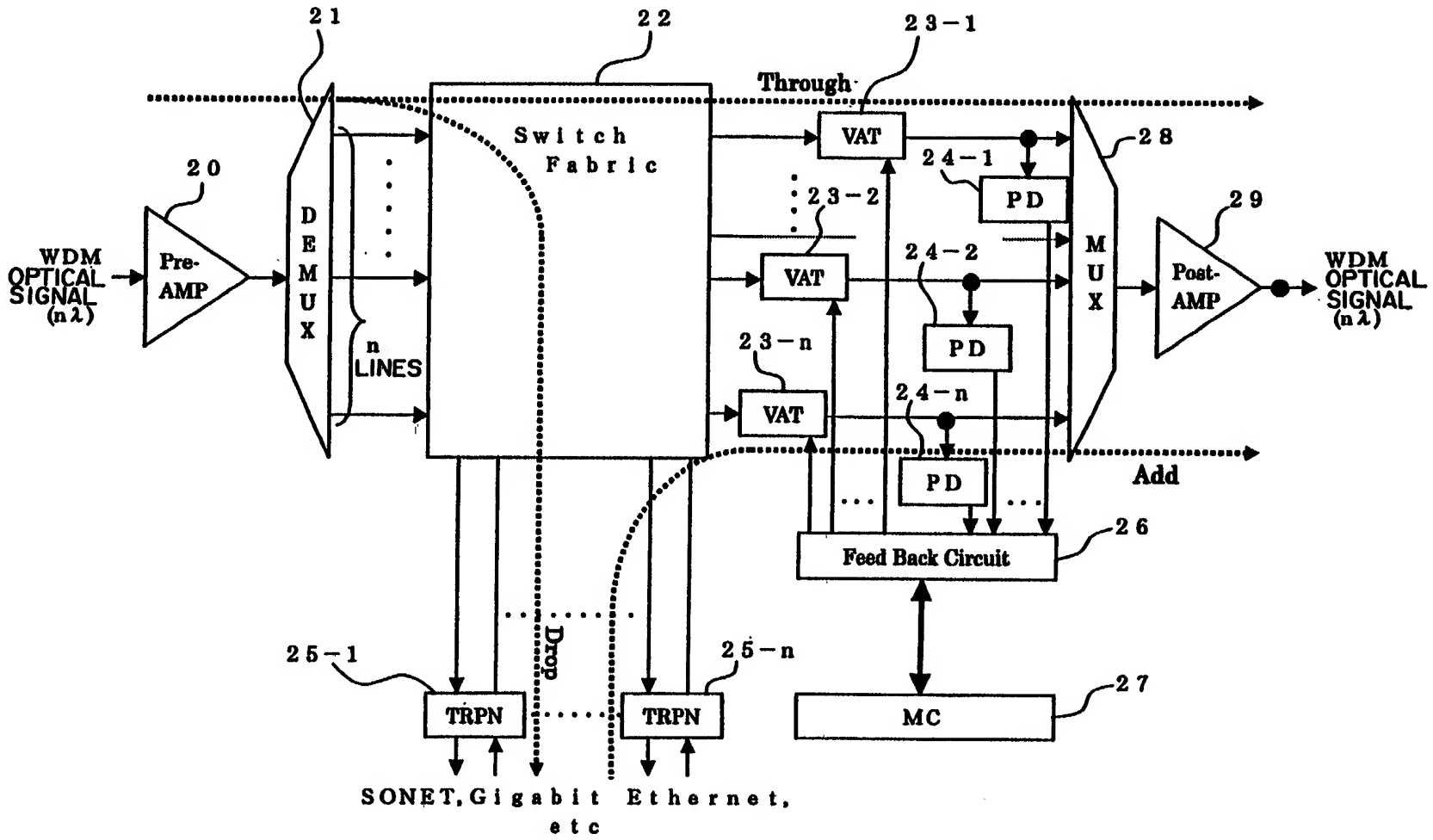

21
22
23-1
Through
Switch Fabric
VAT
24-1
PD
28
20
23-2
VAT
24-2
PD
MUX
29
WDM OPTICAL SIGNAL (nλ)
Pre-AMP
DEMUX
n LINES
Post-AMP
WDM OPTICAL SIGNAL (nλ)
23-n
VAT
24-n
PD
Add
PD
26
Feed Back Circuit
Drop
25-1
25-n
TRPN
TRPN
MC
27
SONET, Gigabit Ethernet, etc

FIG. 7

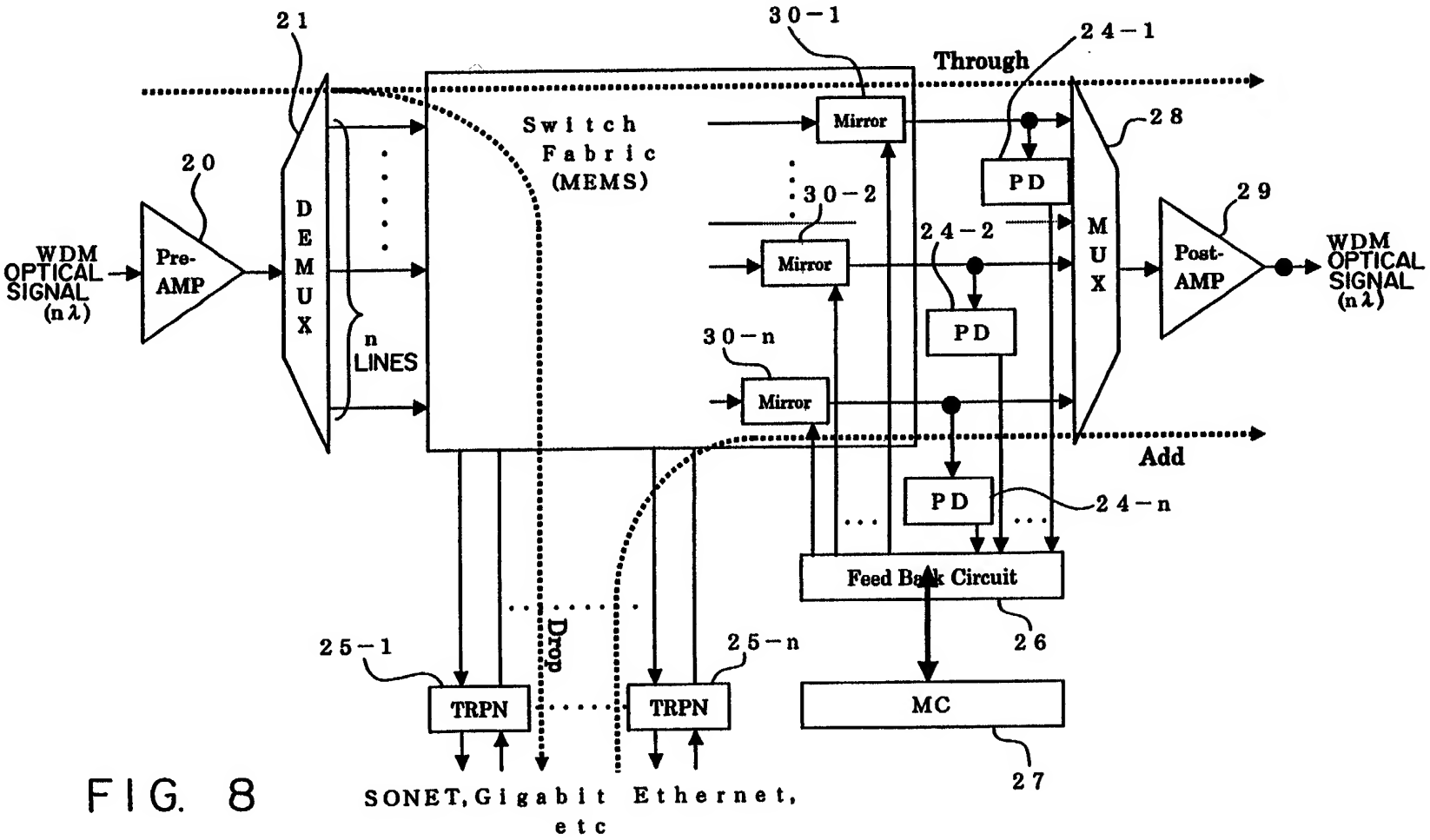


FIG. 8

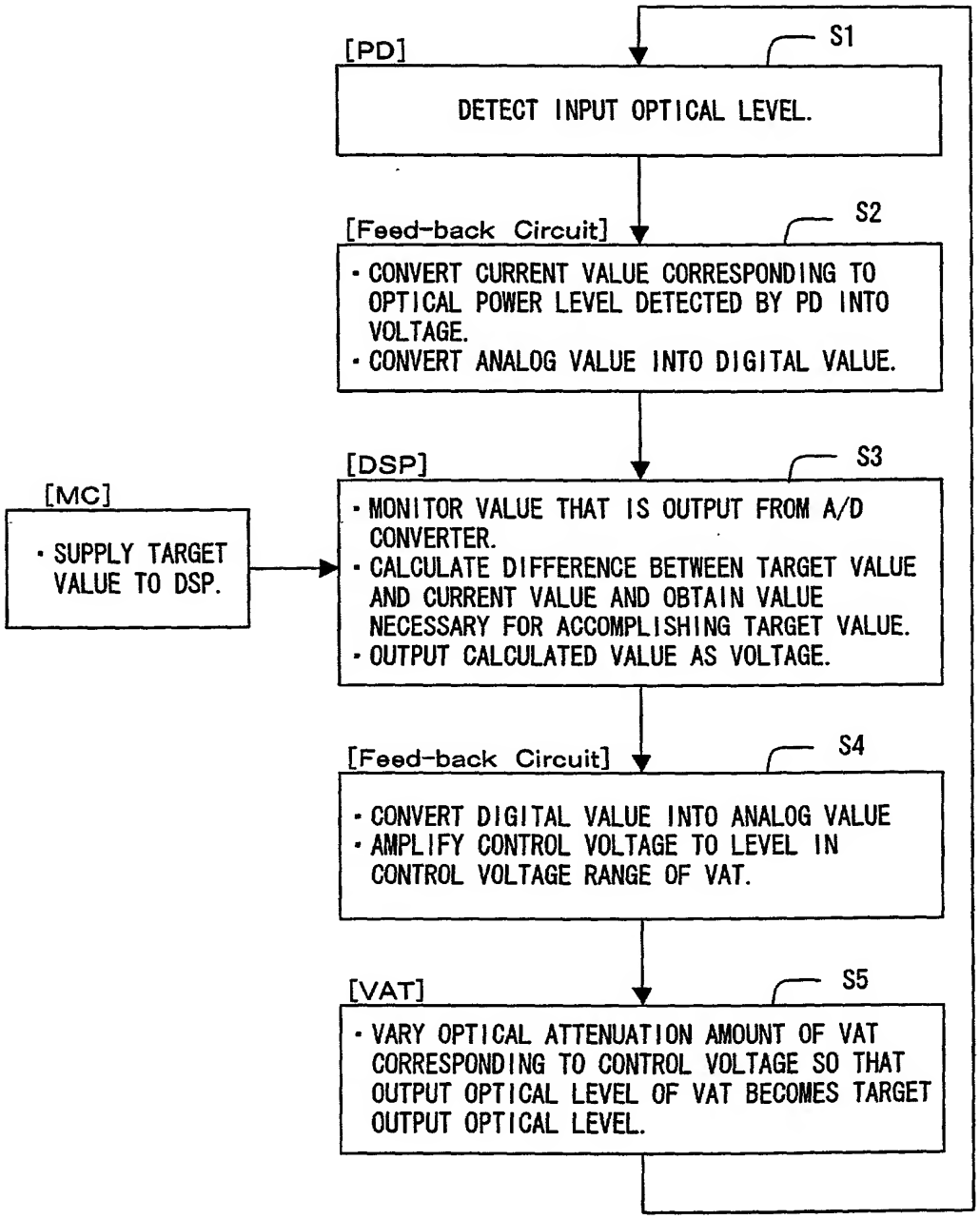


FIG. 9

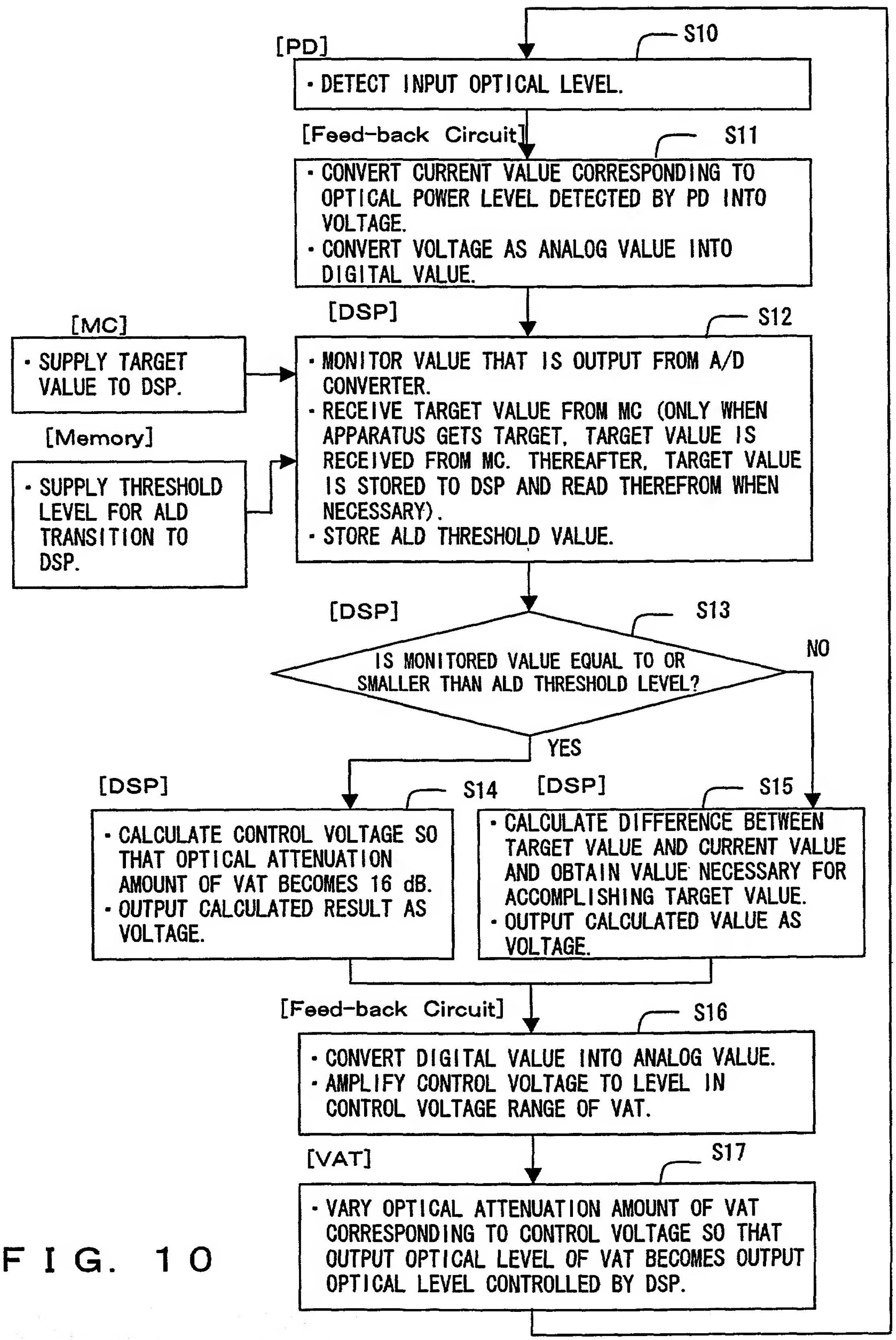

[PD]
S10
• DETECT INPUT OPTICAL LEVEL.
[Feed-back Circuit]
S11
• CONVERT CURRENT VALUE CORRESPONDING TO OPTICAL POWER LEVEL DETECTED BY PD INTO VOLTAGE.
• CONVERT VOLTAGE AS ANALOG VALUE INTO DIGITAL VALUE.
[MC]
• SUPPLY TARGET VALUE TO DSP.
[Memory]
• SUPPLY THRESHOLD LEVEL FOR ALD TRANSITION TO DSP.
[DSP]
S12
• MONITOR VALUE THAT IS OUTPUT FROM A/D CONVERTER.
• RECEIVE TARGET VALUE FROM MC (ONLY WHEN APPARATUS GETS TARGET, TARGET VALUE IS RECEIVED FROM MC. THEREAFTER, TARGET VALUE IS STORED TO DSP AND READ THEREFROM WHEN NECESSARY).
• STORE ALD THRESHOLD VALUE.
[DSP]
S13
IS MONITORED VALUE EQUAL TO OR SMALLER THAN ALD THRESHOLD LEVEL?
NO
YES
[DSP]
S14
• CALCULATE CONTROL VOLTAGE SO THAT OPTICAL ATTENUATION AMOUNT OF VAT BECOMES 16 dB.
• OUTPUT CALCULATED RESULT AS VOLTAGE.
[DSP]
S15
• CALCULATE DIFFERENCE BETWEEN TARGET VALUE AND CURRENT VALUE AND OBTAIN VALUE NECESSARY FOR ACCOMPLISHING TARGET VALUE.
• OUTPUT CALCULATED VALUE AS VOLTAGE.
[Feed-back Circuit]
S16
• CONVERT DIGITAL VALUE INTO ANALOG VALUE.
• AMPLIFY CONTROL VOLTAGE TO LEVEL IN CONTROL VOLTAGE RANGE OF VAT.
[VAT]
S17
• VARY OPTICAL ATTENUATION AMOUNT OF VAT CORRESPONDING TO CONTROL VOLTAGE SO THAT OUTPUT OPTICAL LEVEL OF VAT BECOMES OUTPUT OPTICAL LEVEL CONTROLLED BY DSP.

FIG. 10

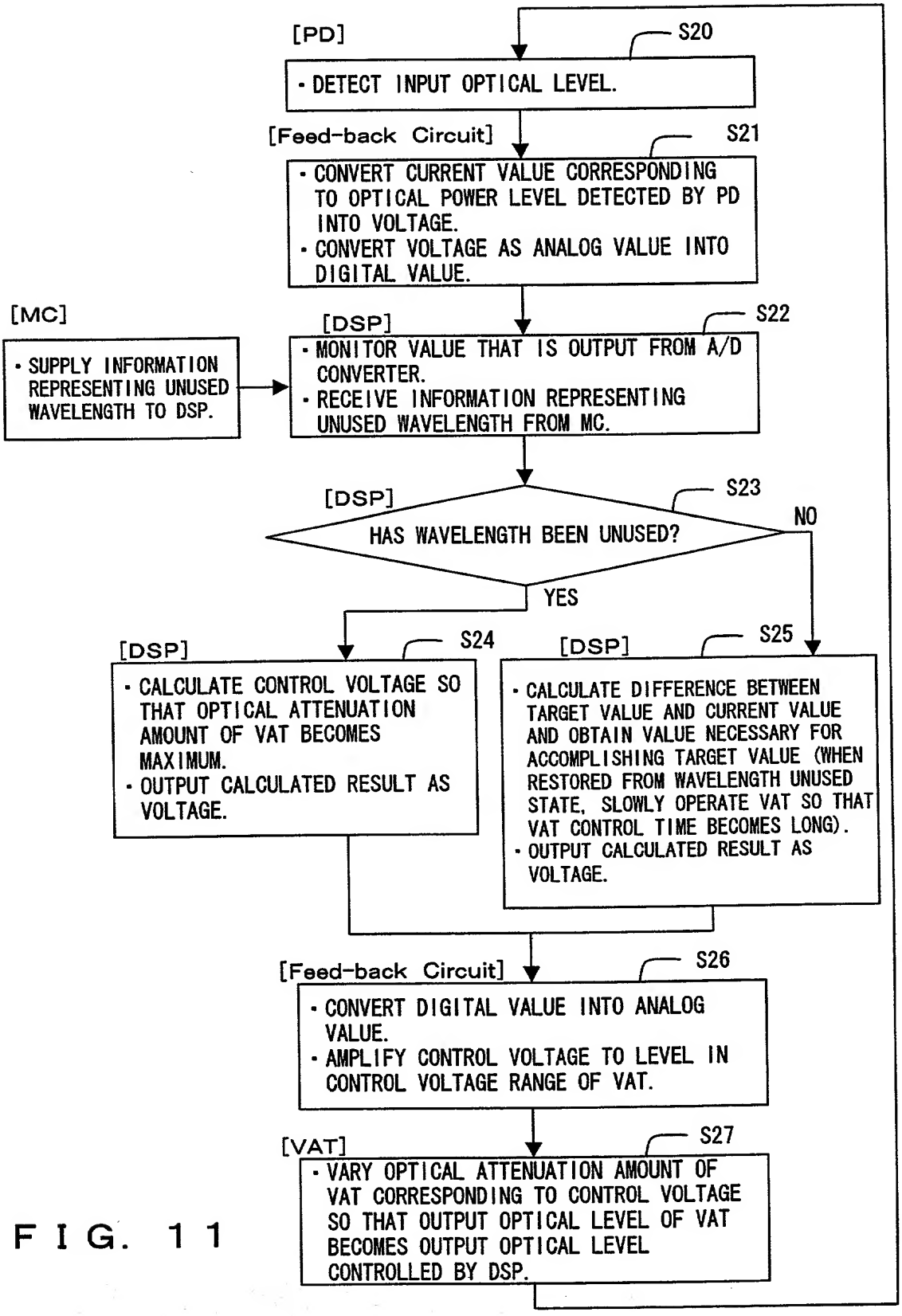


FIG. 11

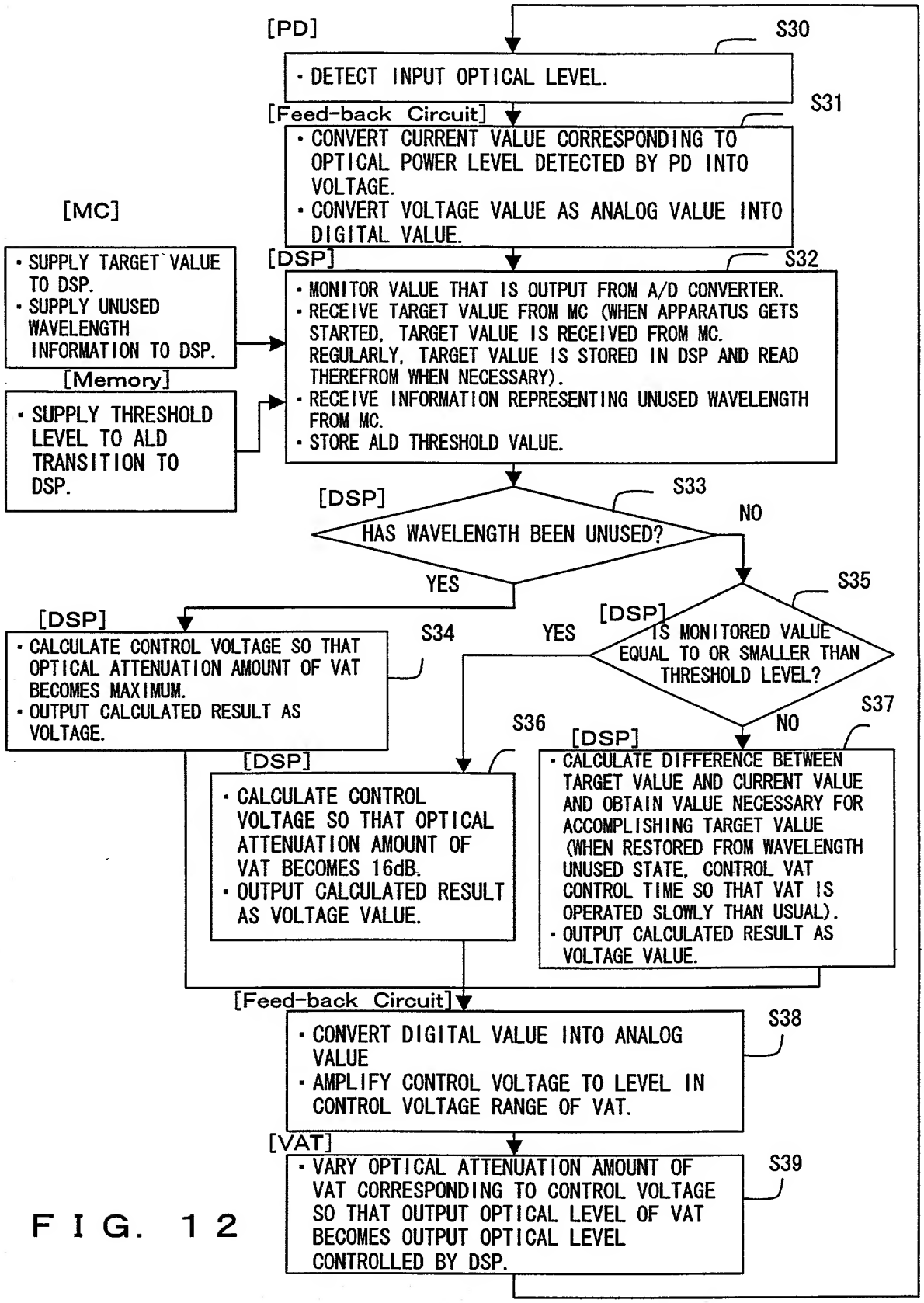


FIG. 12